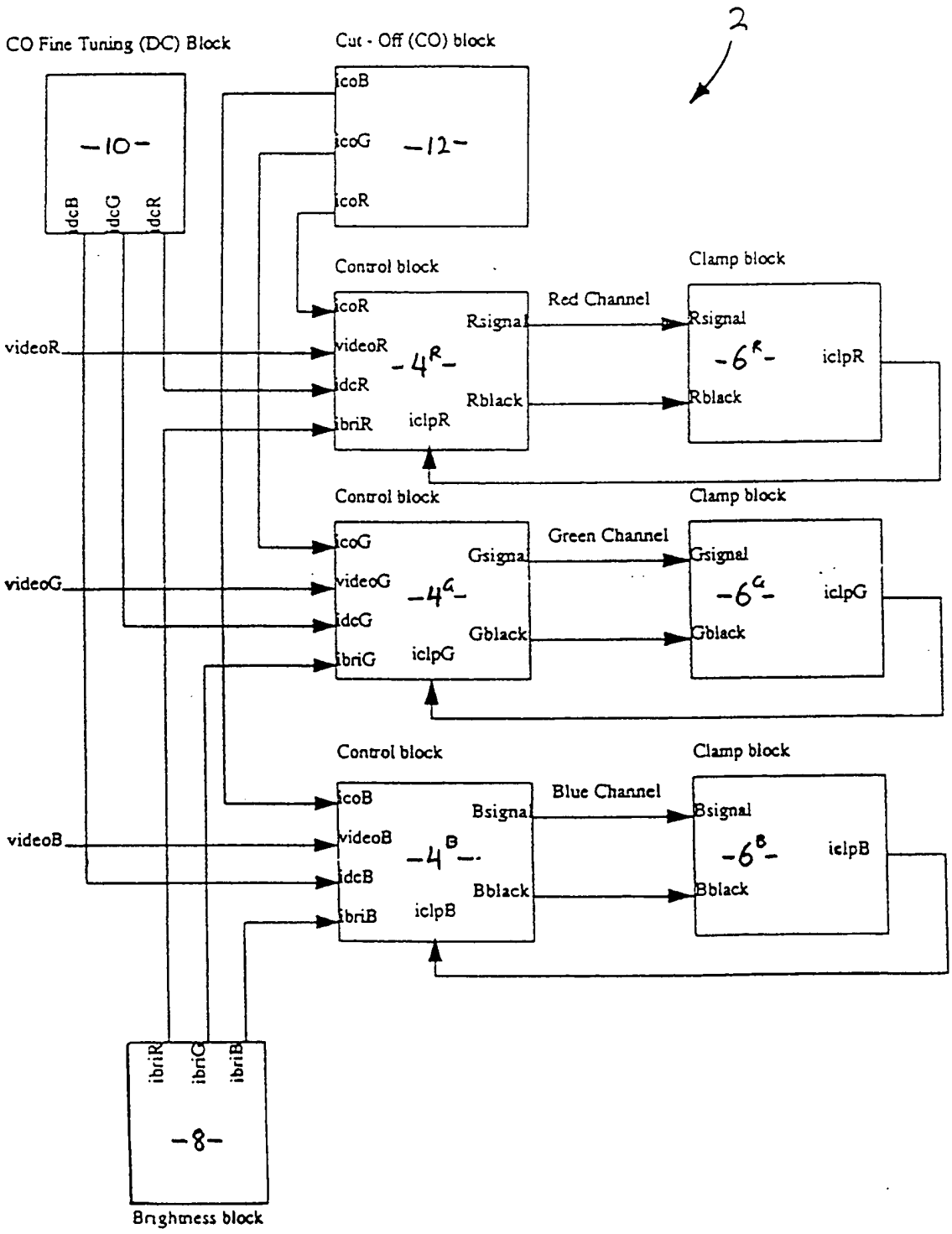

2
CO Fine Tuning (DC) Block
Cut - Off (CO) block
-10-
-12-
idcB
idcG
idcR
icoB
icoG
icoR
Control block
Clamp block
Red Channel
videoR
-4R-
-6R-
Rsignal
Rblack
iclpR
Control block
Clamp block
Green Channel
videoG
-4G-
-6G-
Gsignal
Gblack
iclpG
Control block
Clamp block
Blue Channel
videoB
-4B-
-6B-
Bsignal
Bblack
iclpB
ibriR
ibriG
ibriB
-8-
Brightness block

Figure 1

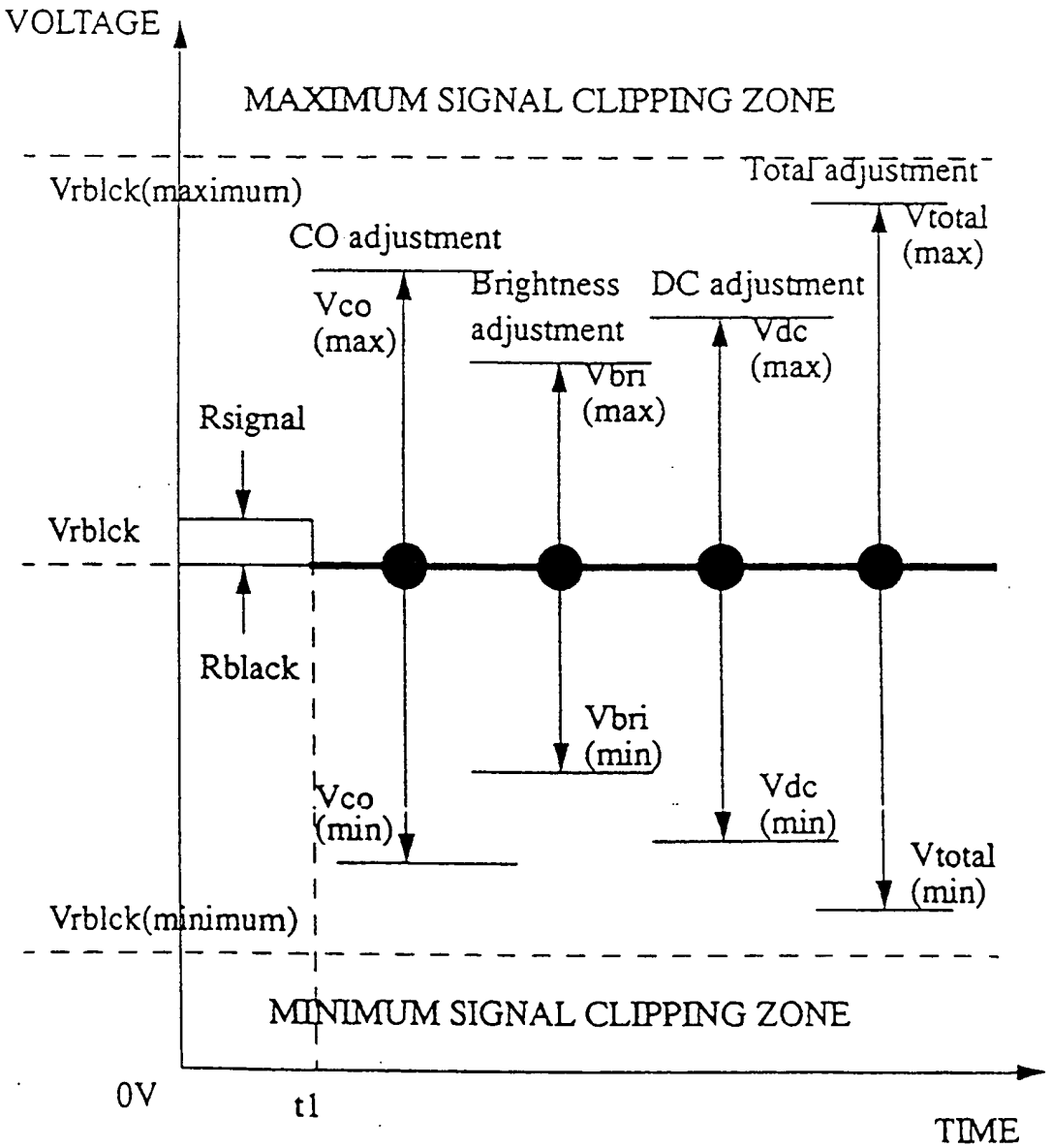

VOLTAGE
MAXIMUM SIGNAL CLIPPING ZONE
Vrblck(maximum)
Total adjustment
Vtotal (max)
CO adjustment
Vco (max)
Brightness adjustment
Vbri (max)
DC adjustment
Vdc (max)
Rsignal
Vrblck
Rblack
Vbri (min)
Vco (min)
Vdc (min)
Vtotal (min)
Vrblck(minimum)
MINIMUM SIGNAL CLIPPING ZONE
0V
t1
TIME

Figure 2

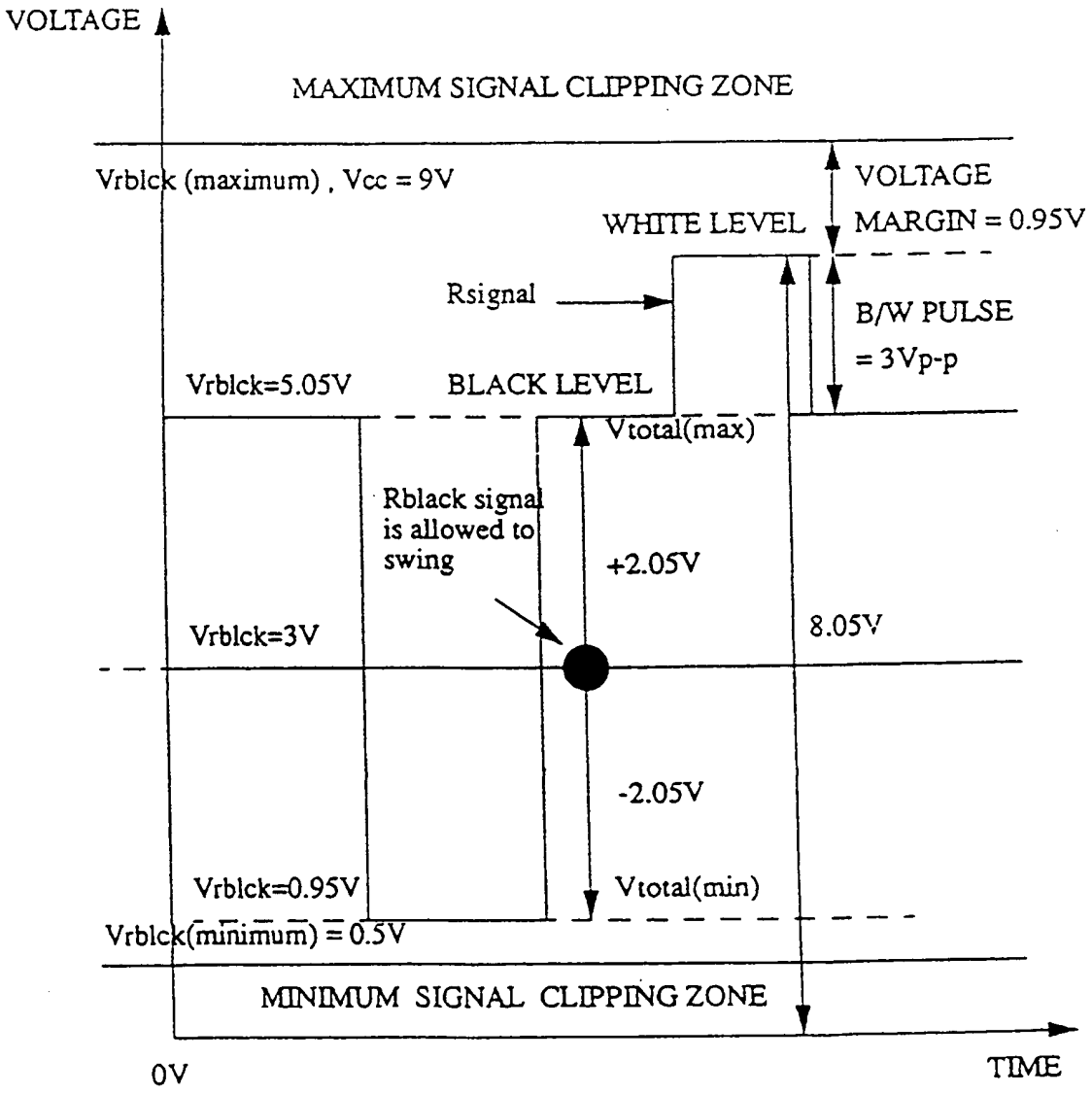

VOLTAGE
MAXIMUM SIGNAL CLIPPING ZONE
Vrblck (maximum) , Vcc = 9V
VOLTAGE
MARGIN = 0.95V
WHITE LEVEL
Rsignal
B/W PULSE
= 3Vp-p
Vrblck=5.05V
BLACK LEVEL
Vtotal(max)
Rblack signal
is allowed to
swing
+2.05V
Vrblck=3V
8.05V
-2.05V
Vrblck=0.95V
Vtotal(min)
Vrblck(minimum) = 0.5V
MINIMUM SIGNAL CLIPPING ZONE
0V
TIME

Figure 3

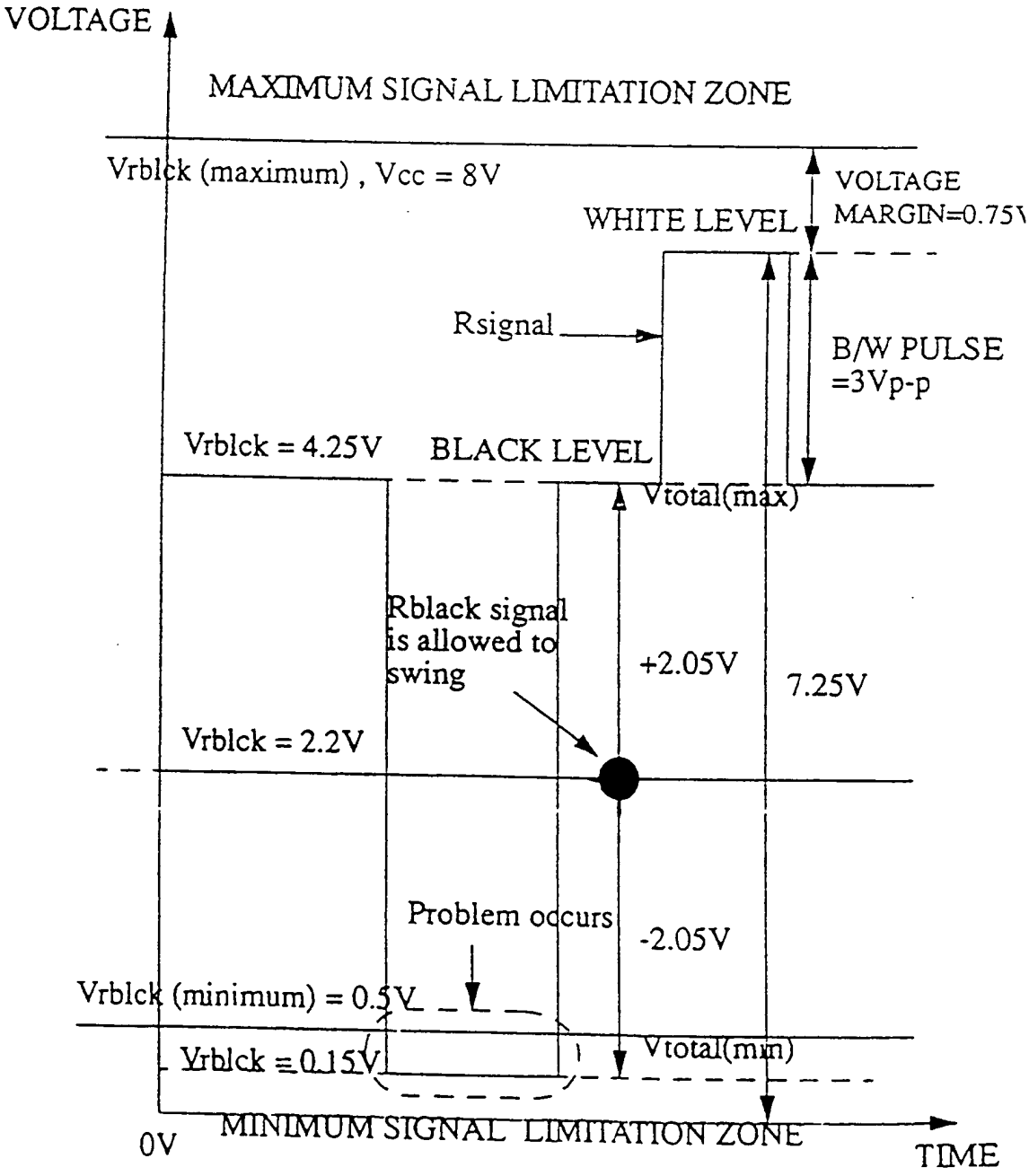

VOLTAGE
MAXIMUM SIGNAL LIMITATION ZONE
Vrblck (maximum) , Vcc = 8V
VOLTAGE MARGIN=0.75V
WHITE LEVEL
Rsignal
B/W PULSE =3Vp-p
Vrblck = 4.25V
BLACK LEVEL
Vtotal(max)
Rblack signal is allowed to swing
+2.05V
7.25V
Vrblck = 2.2V
Problem occurs
-2.05V
Vrblck (minimum) = 0.5V
Vrblck = 0.15V
Vtotal(min)
0V
MINIMUM SIGNAL LIMITATION ZONE
TIME

Figure 4

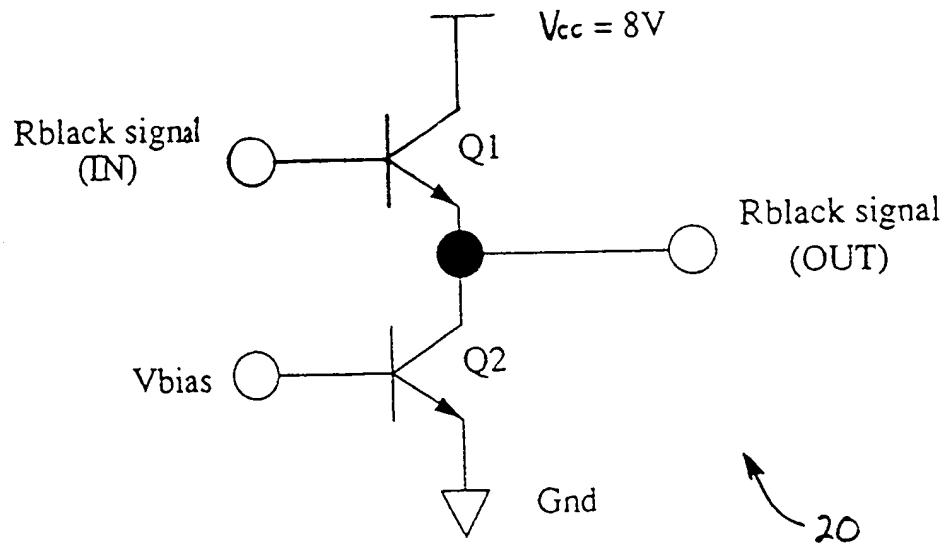
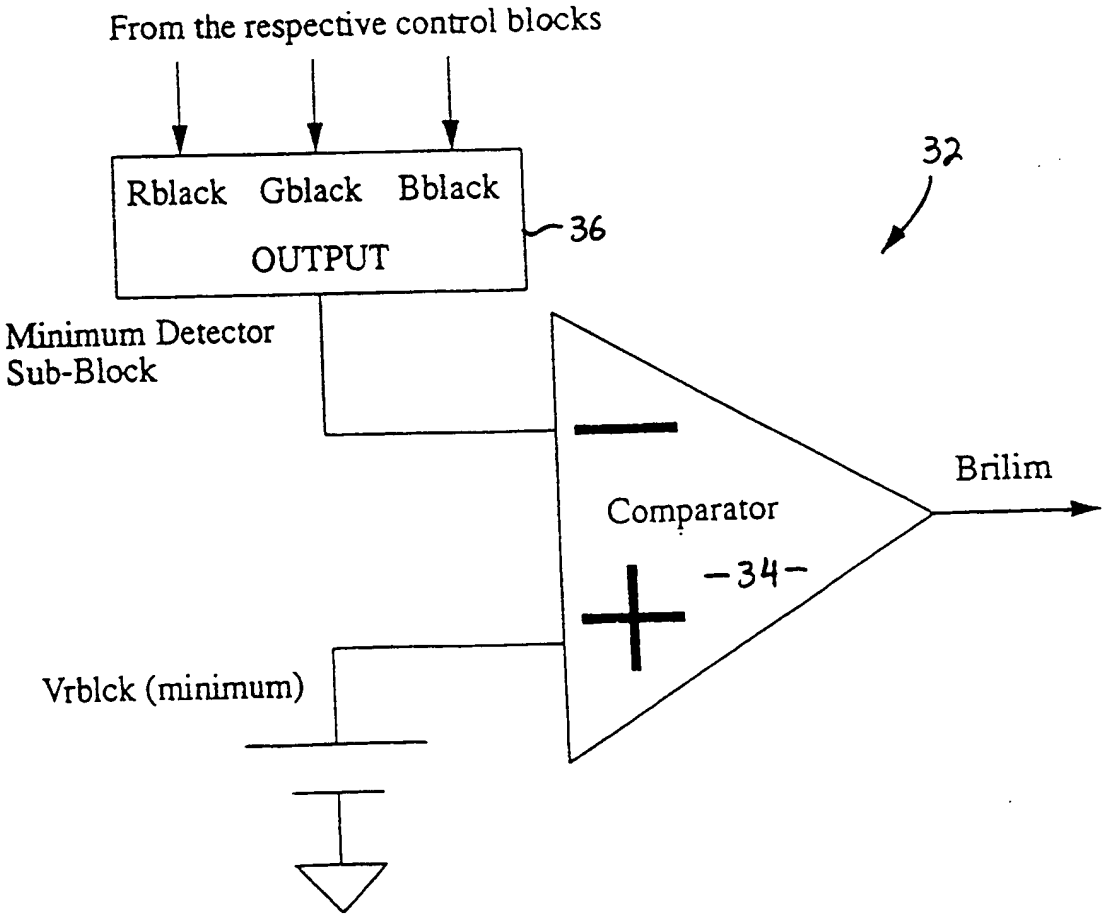

Vcc = 8V
Rblack signal
(IN)
Q1
Rblack signal
(OUT)
Vbias
Q2
Gnd
20

Figure 5


From the respective control blocks
Rblack Gblack Bblack
OUTPUT
36
32
Minimum Detector
Sub-Block
Comparator
34
Brilim
Vrblck (minimum)

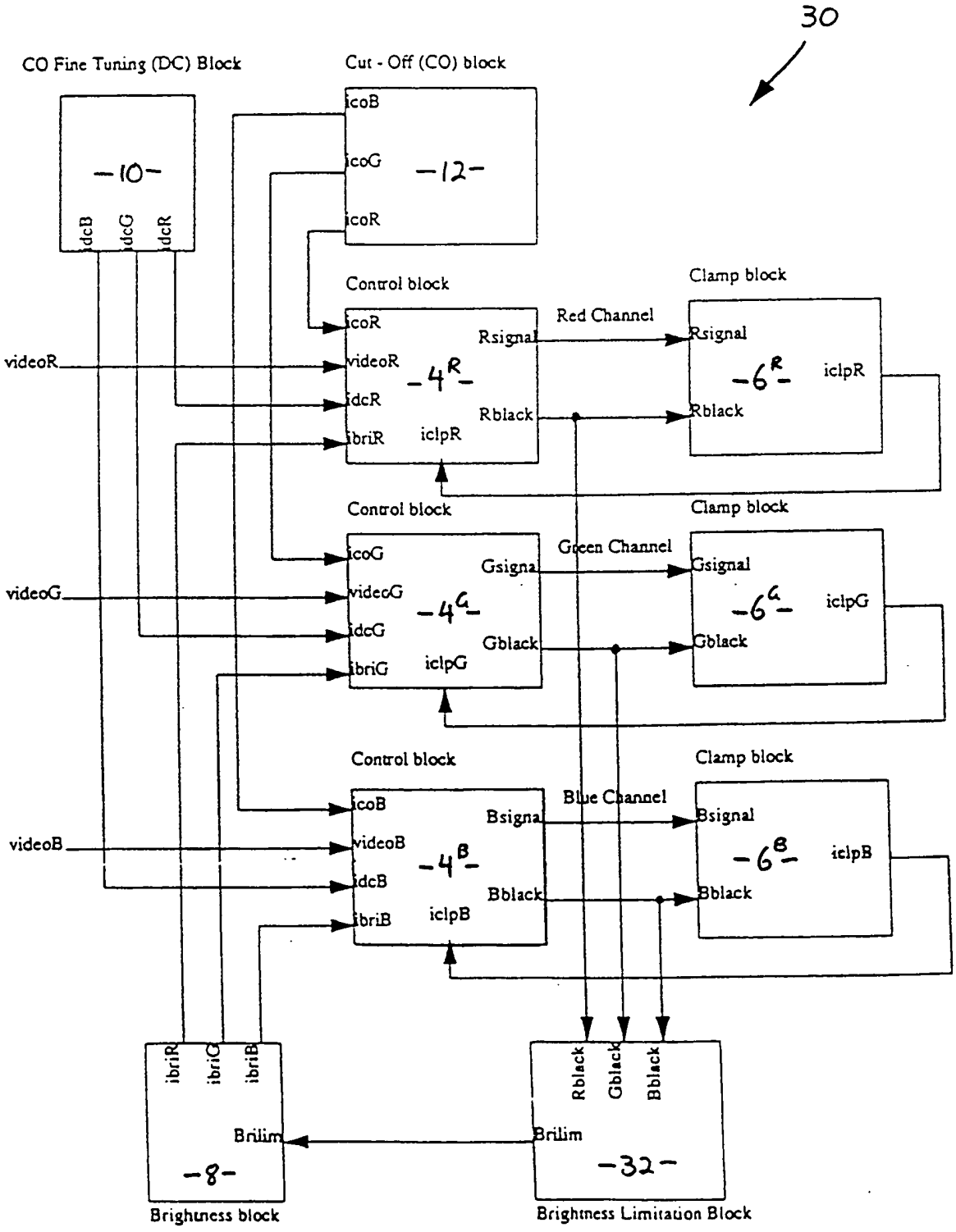

30
CO Fine Tuning (DC) Block
Cut - Off (CO) block
-10-
idcB
idcG
idcR
icoB
icoG
icoR
-12-
Control block
Clamp block
Red Channel
videoR
Rsignal
-4R-
Rblack
ibriR
iclpR
-6R-
Green Channel
videoG
Gsignal
-4G-
Gblack
ibriG
iclpG
-6G-
Blue Channel
videoB
Bsignal
-4B-
Bblack
ibriB
iclpB
-6B-
-8-
Brilim
Brightness block
-32-
Brightness Limitation Block

Figure 6

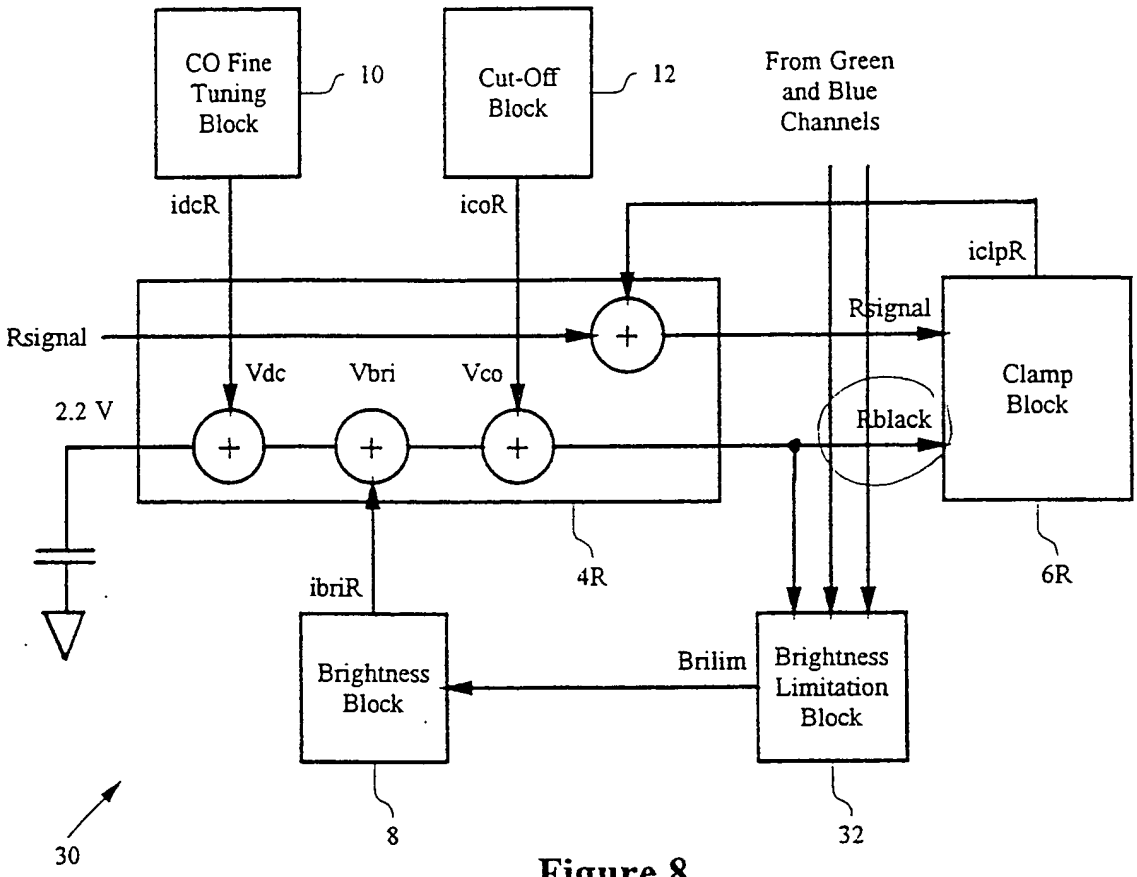

CO Fine Tuning Block
10
Cut-Off Block
12
From Green and Blue Channels
idcR
icoR
iclpR
Rsignal
Rsignal
Vdc
Vbri
Vco
2.2 V
Rblack
Clamp Block
4R
6R
ibriR
Brightness Block
Brilim
Brightness Limitation Block
8
32
30

**Figure 8**

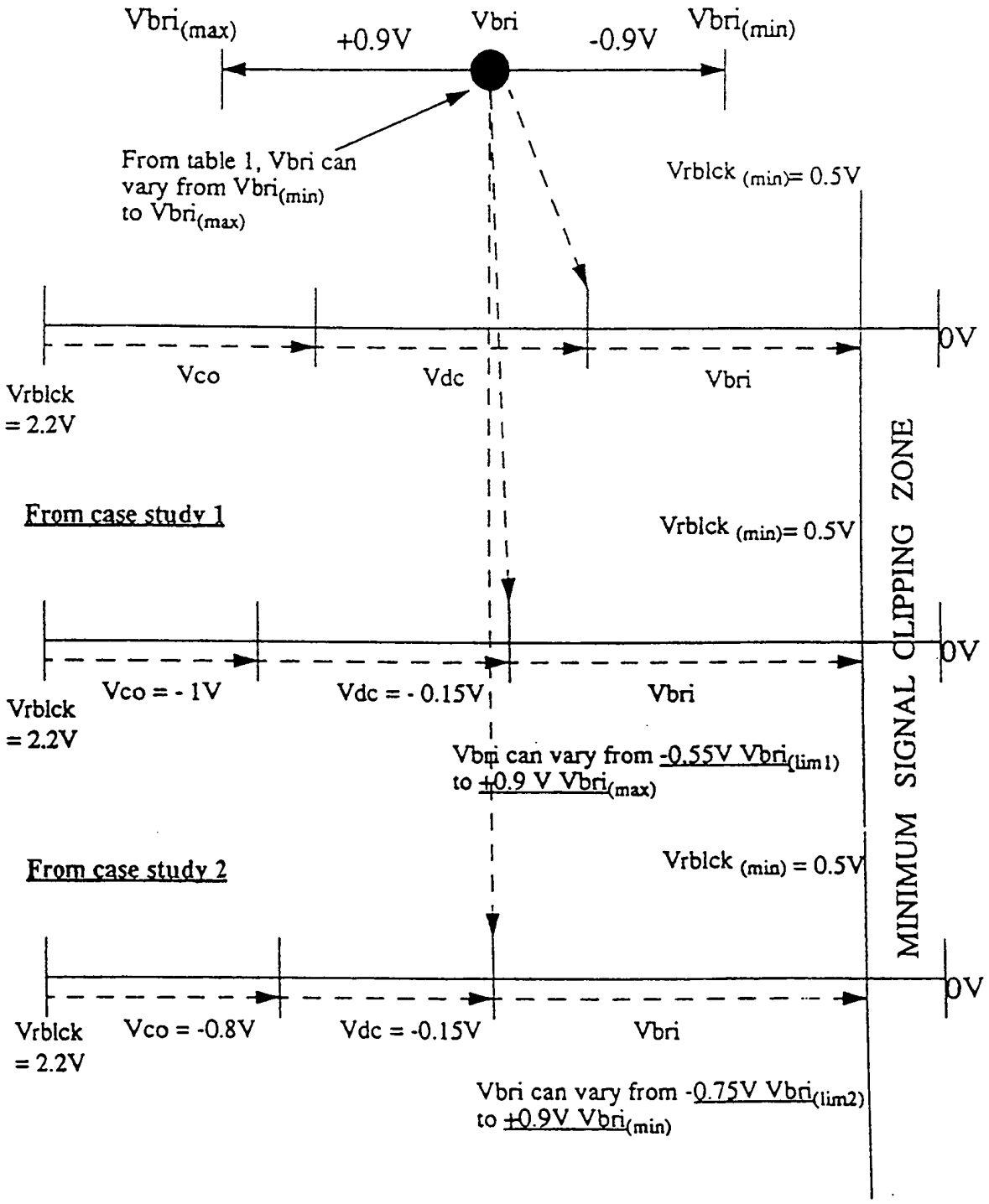

Vbri(max)
+0.9V
Vbri
-0.9V
Vbri(min)
From table 1, Vbri can vary from Vbri(min) to Vbri(max)
Vrblck (min)= 0.5V
0V
Vco
Vdc
Vbri
Vrblck = 2.2V
From case study 1
Vrblck (min)= 0.5V
0V
Vco = - 1V
Vdc = - 0.15V
Vbri
Vrblck = 2.2V
Vbri can vary from -0.55V Vbri(lim1) to +0.9 V Vbri(max)
From case study 2
Vrblck (min) = 0.5V
MINIMUM SIGNAL CLIPPING ZONE
0V
Vrblck = 2.2V
Vco = -0.8V
Vdc = -0.15V
Vbri
Vbri can vary from -0.75V Vbri(lim2) to +0.9V Vbri(min)

Figure 9